Reply to Office Action

AMENDMENTS TO THE CLAIMS

- 1. (Currently Amended) A heat-sensitive lithographic printing plate precursor comprising a support having a hydrophilic surface and a coating provided on the hydrophilic surface, said coating comprising in the order given a first layer containing an oleophilic resin soluble in an aqueous alkaline developer and a second layer capable of preventing the developer from penetrating into the first layer at unexposed areas, said second layer comprising a water-repellent compound selected from the group consisting of
 - a polymer comprising siloxane and/or perfluoroalkyl monomeric units, and
 - a block- or graft-copolymer comprising a poly- or oligo(alkylene oxide) and a
 polymer or oligomer comprising silexane and/ or block of poly- or oligosilexane
 and/or perfluoroalkyl monomeric units and

wherein the alkali-solubility of said coating increases on heating and said coating comprises an infrared light absorbing dye characterised in that the infrared absorbing dye comprises comprising at least one perfluoroalkyl group, wherein the infrared light absorbing dye carries a charge and at least one perfluoroalkyl group is included in a counter ion and contains at least 6 fluorine atoms.

- 2. (Canceled)
- 3. (Canceled)
- 4. (Currently Amended) A lithographic printing plate precursor according to claim 1 wherein at least one perfluoroalkyl group is covalently linked to the infrared light absorbing dye and at least one perfluoralkyl group containing 6 more more fluorine atoms is included in is comprised in a counter ion.

Page 3 of 31

Reply to Office Action

- 5. (Previously Presented) A lithographic printing plate precursor according to claim 1 wherein the infrared light absorbing dye is selected from the group consisting of squarylium, croconate, merocyanine, cyanine, indolizine, pyrilium and metal dithioline dyes.
- 6. (Previously Presented) A lithographic printing plate precursor according to claim 1 wherein the amount of the water-repellent compound in the coating is between 0.5 and 15 mg/m².
- 7. (Previously Presented) A lithographic printing plate precursor according to claim 1 wherein the second layer consists essentially of the water-repellent compound and the infrared light absorbing dye.
- 8. (Previously Presented) A lithographic printing plate precursor according to claim 1 wherein the infrared light absorbing dye corresponds to the following formula:

wherein

Reply to Office Action

-L1- and -L2- independently represent a divalent linking;

-E¹ and -E² independently represent a neutral, anionic or cationic terminal group selected from

alkyl, -OH, -H, -Cl, -Br, -F (neutral groups);

-SO₃*, -SO₄*, -PO₃**, -PO₄**, -COO* (anionic groups);

-[NR⁸R^bR^o]⁺(cationic group);

Ra, Rb and Rc independently represent a hydrogen atom or an alkyl group;

-A¹- and -A²- independently represent $-C_vF_{2v^-}$, -[(CF₂)₂-O]_w-, a long chain alkyl group containing at least four carbon atoms, or an optionally substituted alkyl, alkenyl, aryl or aralkyl group:

with p_1 and p_2 are 0 or 1; with v and w are 2 or an integer greater than 2;

-Y'- and -Y'- independently represent -CR'R''-, -S-, -Se-, -NR''-, -CH=CH- or -O-:

R¹ to R¹¹ each independently represent a hydrogen atom, an optionally substituted alkyl, alkenyl, aryl or aralkyl group or a group selected from a halogen atom, -NO2, -O-R^d, -CO-R^d, -CO-O-R^d, -CO-O-R^d, -CO-NR^dR^e, -NR^d-CO-R^c, -NR^d-CO-O-R^e, -NR^d-CO-NR^cR^f, -SR^d, -SO-R^d, -SO₂-R^d, -SO₂-O-R^d, -SO₂NR^dR^e or a perfluoroalkyl group, each of said groups may optionally comprise a terminal group E defined above as -E¹ and -E² and/or wherein two adjacent groups selected from R¹, R², R³, R⁴ R⁵, R⁶, R⁷, R⁸, Y¹ and Y² together form an optionally substituted 5- or 6- membered ring; R^d, R^e and R^f independently represent a hydrogen or an optionally substituted alkyl, alkenyl, aryl or aralkyl group;

 Z^1 and Z^3 each independently represent a hydrogen atom, an alkyl group or Z^1 and Z^3 together represent the necessary atoms to complete an optionally substituted 5- or 6-membered ring;

Reply to Office Action

Z² represents a substituent selected from a hydrogen atom, an alkyl group, a halogen atom, an amino group, an arylthio group, an alkylthio group, an aryloxy group, an alkoxy group, a barbituric group or a thiobarbituric group, each of said groups being optionally substituted;

X represents one or more optional counter ions having a total charge opposite to the dye and wherein X optionally comprises a perfluoroalkyl group containing at least 6 fluorine atoms;

with the proviso that at least one of the following substituents contains a perfluoroalkyl group: $-A^1$, $-A^2$, R^1 to R^{11} or X.

- 9. (Previously Presented) A lithographic printing plate precursor according to claim 8 wherein $-Z^1$ and $-Z^3$ together represent $-(CH_2)_2$ or $-(CH_2)_3$ -
- 10. (Previously Presented) A lithographic printing plate precursor according to claim 8 wherein the IR light absorbing dye corresponds to one of the following formulae:

Reply to Office Action

wherein p_1 , p_2 , $-L^1$ -, $-L^2$ -, $-A^1$ -, $-A^2$ -, $-E^1$, $-E^2$, R^9 , R^{10} , Z^2 and X have the same meaning as defined in claim 8.

11. (Original) A lithographic printing plate precursor according to claim 8 wherein the IR light absorbing dye corresponds to one of the following formulae:

Reply to Office Action

$$\begin{array}{c} R^{12} \\ R^{14} \\ R^{15} \\ R^{16} \\ R^{16$$

Page 8 of 31

Reply to Office Action

 $CF_3 + CF_2 + mG$

Reply to Office Action

wherein

m is 2 or an integer greater than 2;

R¹² and R¹³ independently represent a hydrogen atom, an optionally substituted alkyl, alkenyl, aryl or aralkyl group or a perfluoroalkyl group which may optionally comprise a terminal group E defined as -E¹ and -E² in claim 8;

 R^{14} represents $-(CH_2)_2$ -OCO- $(CH_2)_2$ - $(CF_2)_k$ - CF_3 ; with k is 2 or an integer greater than 2;

W represents Cl, Br, I, F, ClO4, BF4;

G represents SO3, SO4 or COO.

- 12. (Previously Presented) A lithographic printing plate precursor according to claim 2 36 wherein the infrared light absorbing due is selected from the group consisting of squarylium, croconate, merocyanine, cyanine, indolizine, pyrilium and metal dithioline dues.
 - 13. (Canceled)

Reply to Office Action

- 14. (Previously Presented) A lithographic printing plate precursor according to claim 4 wherein the infrared light absorbing dye is selected from the group consisting of squarylium, croconate, merocyanine, cyanine, indolizine, pyrilium and metal dithioline dyes.
- 15. (Previously Presented) A lithographic printing plate precursor according to claim 36 2 wherein the amount of the water-repellent compound in the coating is between 0.5 and 15 mg/m².
 - 16. (Canceled)
- 17. (Previously Presented) A lithographic printing plate precursor according to claim 4 wherein the amount of the water-repellent compound in the coating is between 0.5 and 15 mg/m².
- 18. (Previously Presented) A lithographic printing plate precursor according to claim 5 wherein the amount of the water-repellent compound in the coating is between 0.5 and 15 mg/m².
- 19. (Previously Presented) A lithographic printing plate precursor according to claim 2 36 wherein the second layer consists essentially of the water-repellent compound and the infrared light absorbing dye.
 - 20. (Canceled)
- 21. (Previously Presented) A lithographic printing plate precursor according to claim 4 wherein the second layer consists essentially of the water-repellent compound and the infrared light absorbing dye.
- 22. (Previously Presented) A lithographic printing plate precursor according to claim 5 wherein the second layer consists essentially of the water-repellent compound and the infrared light absorbing dye.

Reply to Office Action

- 23. (Previously Presented) A lithographic printing plate precursor according to claim 6 wherein the second layer consists essentially of the water-repellent compound and the infrared light absorbing dye.
- 24. (Currently Amended) A lithographic printing plate precursor according to claim 4 wherein the infrared light absorbing dye corresponds to the following formula:

wherein

-L1- and -L2- independently represent a divalent linking;

-E¹ and -E² independently represent a neutral, anionic or cationic terminal group selected from

alkyl, -OH, -H, -Cl, -Br, -F (neutral groups);

-SO₃, -SO₄, -PO₃, -PO₄, -PO₄, -COO (anionic groups);

-[NR^aR^bR^c]⁺(cationic group);

Ra, Rb and Rc independently represent a hydrogen atom or an alkyl group;

Reply to Office Action

-A¹- and -A²- independently represent $-C_vF_{2v}$ -, -[(CF₂)₂-O]_w-, a long chain alkyl group containing at least four carbon atoms, or an optionally substituted alkyl, alkenyl, aryl or aralkyl group;

with p_1 and p_2 are 0 or 1; with v and w are 2 or an integer greater than 2;

 $-Y^1$ - and $-Y^2$ - independently represent -CR⁹R¹⁰-, -S-, -Se-, -NR¹¹-, -CH=CH- or -O-;

 R^1 to R^{11} each independently represent a hydrogen atom, an optionally substituted alkyl, alkenyl, aryl or aralkyl group or a group selected from a halogen atom, -NO2, -O- R^d , -CO- R^d , -CO-O- R^d , -CO-O- R^d , -CO-NR d , -CO-NR d , -NR d -CO-R d , -NR d -CO-O-R d , -SO₂-R d , -SO₂-O-R d , -SO₂NR d R e or a perfluoroalkyl group, each of said groups may optionally comprise a terminal group E defined above as -E 1 and -E 2 and/or wherein two adjacent groups selected from R^1 , R^2 , R^3 , R^4 , R^5 , R^6 , R^7 , R^8 , Y 1 and Y 2 together form an optionally substituted 5- or 6- membered ring; R^d , R^e and R^f independently represent a hydrogen or an optionally substituted alkyl, alkenyl, aryl or aralkyl group;

 Z^1 and Z^3 each independently represent a hydrogen atom, an alkyl group or Z^1 and Z^3 together represent the necessary atoms to complete an optionally substituted 5- or 6-membered ring;

Z² represents a substituent selected from a hydrogen atom, an alkyl group, a halogen atom, an amino group, an arylthio group, an alkylthio group, an aryloxy group, an alkoxy group, a barbituric group or a thiobarbituric group, each of said groups being optionally substituted;

X represents one or more optional counter ions having a total charge opposite to the dye and wherein X optionally comprises a perfluoroalkyl group containing at least 6 fluorine atoms[[;]]

Reply to Office Action

with the provise that at least one of the following substituents contains a perfluorealkyl group:

$$-A^{+}$$
, A^{2} , R^{+} to R^{++} or X .

25. (Currently Amended) A lithographic printing plate precursor according to claim 2 36 wherein the infrared light absorbing dye corresponds to the following formula:

wherein

-L1- and -L2- independently represent a divalent linking;

-E¹ and -E² independently represent a neutral, anionic or cationic terminal group selected from

alkyl, -OH, -H, -Cl, -Br, -F (neutral groups);

-SO₃, -SO₄, -PO₃², -PO₄², -COO (anionic groups);

-[NR^aR^bR^c]⁺(cationic group);

 $R^a,\,R^b$ and R^c independently represent a hydrogen atom or an alkyl group;

Reply to Office Action

-A¹- and -A²- independently represent $-C_vF_{2v}$ -, -[(CF₂)₂-O]_w-, a long chain alkyl group containing at least four carbon atoms, or an optionally substituted alkyl, alkenyl, aryl or aralkyl group;

with p₁ and p₂ are 0 or 1; with v and w are 2 or an integer greater than 2;

-Y¹- and -Y²- independently represent -CR⁹R¹⁰-, -S-, -Se-, -NR¹¹-, -CH=CH- or -O-;

 R^1 to R^{11} each independently represent a hydrogen atom, an optionally substituted alkyl, alkenyl, aryl or aralkyl group or a group selected from a halogen atom, -NO2, -O- R^d , -CO-O- R^d , -CO-O- R^d ,

-O-CO-R^d, -CO-NR^dR^e, -NR^dR^e, -NR^d-CO-R^e, -NR^d-CO-O-R^e, -NR^d-CO-NR^eR^f, -SR^d, -SO-R^d, -SO₂-R^d, -SO₂-O-R^d, -SO₂NR^dR^e or a perfluoroalkyl group, each of said groups may optionally comprise a terminal group E defined above as -E¹ and -E² and/or wherein two adjacent groups selected from R¹, R², R³, R⁴, R⁵, R⁶, R⁷, R⁸, Y¹ and Y² together form an optionally substituted 5- or 6- membered ring;

R^d, R^c and R^f independently represent a hydrogen or an optionally substituted alkyl, alkenyl, aryl or aralkyl group;

 Z^1 and Z^3 each independently represent a hydrogen atom, an alkyl group or Z^1 and Z^3 together represent the necessary atoms to complete an optionally substituted 5- or 6-membered ring;

Z² represents a substituent selected from a hydrogen atom, an alkyl group, a halogen atom, an amino group, an arylthio group, an alkylthio group, an aryloxy group, an alkoxy group, a barbituric group or a thiobarbituric group, each of said groups being optionally substituted;

Reply to Office Action

X represents one or more optional counter ions having a total charge opposite to the dye and wherein X optionally comprises a perfluoroalkyl group containing at least 6 fluorine atoms;

with the proviso that at least one of the following substituents contains a perfluoroalkyl group:

-A1-, -A2-, or R1 to R11-or X.

- 26. (Canceled)
- 27. (Previously Presented) A lithographic printing plate precursor according to claim 24, wherein $-Z^1$ and $-Z^3$ together represent $-(CH_2)_2$ -for $-(CH_2)_3$ -.
- 28. (Previously Presented) A lithographic printing plate precursor according to claim 25, wherein $-Z^1$ and $-Z^3$ together represent $-(CH_2)_2$ or $-(CH_2)_3$ -.
 - 29. (Canceled)
- 30. (Currently Amended) A lithographic printing plate precursor according to claim 27 wherein the IR light absorbing dye corresponds to one of the following formulae:

Reply to Office Action

wherein p_1 , p_2 , L^1 -, L^2 -, A^1 -, A^3 -, E^4 , E^2 , R^9 , R^{49} , Z^3 and X have the same meaning as defined in claim 8.

-L1- and -L2- independently represent a divalent linking;

-E¹ and -E² independently represent a neutral, anionic or cationic terminal group selected from

alkyl, -OH, -H, -Cl, -Br, -F (neutral groups);

Reply to Office Action

-SO₃, -SO₄, -PO₃², -PO₄², -COO (anionic groups);

-[NR^aR^bR^c]⁺(cationic group);

R^a, R^b and R^c independently represent a hydrogen atom or an alkyl group;

 $-A^{1}$ - and $-A^{2}$ - independently represent $-C_{v}F_{2v}$ -, $-[(CF_{2})_{2}-O]_{w}$.

a long chain alkyl group containing at least four carbon atoms, or an optionally substituted alkyl, alkenyl, aryl or aralkyl group;

with p₁ and p₂ are 0 or 1:

with v and w are 2 or an integer greater than 2:

R⁹ and R¹⁰ each independently represent a hydrogen atom, an optionally substituted alkyl, alkenyl, aryl or aralkyl group or a group selected from a halogen atom, -NO2, -O-R^d, -CO-R^d, -CO-O-R^d, -CO-NR^dR^e, -NR^dR^e, -NR^d-CO-R^e, -NR^d-CO-O-R^e, -NR^d-CO-O-R^e, -NR^d-CO-O-R^e, -NR^d-CO-NR^eR^f, -SR^d, -SO-R^d, -SO₂-R^d, -SO₂-O-R^d, -SO₂NR^dR^e or a perfluoroalkyl group, each of said groups may optionally comprise a terminal group E defined above as -E¹ and -E²; R^d, R^e and R^f independently represent a hydrogen or an optionally substituted alkyl, alkenyl, aryl or aralkyl group;

Z² represents a substituent selected from a hydrogen atom, an alkyl group, a halogen atom, an amino group, an arylthio group, an alkylthio group, an aryloxy group, an alkoxy group, a barbituric group or a thiobarbituric group, each of said groups being optionally substituted;

X represents one or more counter ions having a total charge opposite to the dye and wherein X comprises a perfluoroalkyl group containing at least 6 fluorine atoms.

31. (Currently Amended) A lithographic printing plate precursor according to claim 28 wherein the IR light absorbing dye corresponds to one of the following formulae:

Reply to Office Action

Page 19 of 31

X

Reply to Office Action

wherein p_1 , p_2 , L^2 , L^2 , A^4 , A^2 , E^4 , E^5 , R^9 , R^{10} , Z^2 and X-have the same meaning as defined in claim 8.

-L1- and -L2- independently represent a divalent linking;

-E¹ and -E² independently represent a neutral, anionic or cationic terminal group selected from

alkyl. -OH, -H, -Cl, -Br, -F (neutral groups);

-SO₃, -SO₄, -PO₃², -PO₄², -COO (anionic groups);

-[NR^aR^bR^c]⁺(cationic group);

Ra, Rb and Ra independently represent a hydrogen atom or an alkyl group;

 $-A^1$ - and $-A^2$ - independently represent $-C_vF_{2v}$ -, $-[(CF_2)_v-O]_{w^2}$, a long chain alkyl group containing at least four carbon atoms, or an optionally substituted alkyl, alkenyl, aryl or aralkyl group;

with p₁ and p₂ are 0 or 1; with v and w are 2 or an integer greater than 2;

R⁹ and R¹⁰ each independently represent a hydrogen atom, an optionally substituted alkyl, alkenyl, aryl or aralkyl group or a group selected from a halogen atom, -NO2, -O-R^d, -CO-R^d, -CO-O-R^d, -O-CO-R^d, -CO-NR^dR^c, -NR^d-CO-R^c, -NR^d-CO-O-R^e, -NR^d-CO-O-R^e, -NR^d-CO-NR^cR^f, -SR^d, -SO-R^d, -SO₂-R^d, -SO₂-O-R^d, -SO₂NR^dR^e or a perfluoroalkyl group, each of said groups may optionally comprise a terminal group E defined above as -E¹ and -E²; R^d, R^c and R^f independently represent a hydrogen or an optionally substituted alkyl, alkenyl, aryl or aralkyl group;

Z² represents a substituent selected from a hydrogen atom, an alkyl group, a halogen atom, an amino group, an arylthic group, an alkylthic group, an aryloxy group, an alkoxy group, a barbituric group or a thiobarbituric group, each of said groups being optionally substituted;

Reply to Office Action

X represents one or more counter ions having a total charge opposite to the dye and wherein X comprises a perfluoroalkyl group containing at least 6 fluorine atoms;

with the proviso that at least one of the following substituents contains a perfluoroalkyl group: -A¹-, -A²- or R⁹ or R¹⁰.

32. (Canceled)

33. (Currently Amended) A lithographic printing plate precursor according to claim 30 wherein the IR light absorbing dye corresponds to one of the following formulae:

N

Reply to Office Action

$$CF_3$$
 CF_2 CF_3 CF_3 CF_3

$$CF_3 + CF_2 + MG$$

Reply to Office Action

$$CF_3$$
 CF_2 m G

wherein

m is 2 or an integer greater than 2;

R¹² and R¹³ independently represent a hydrogen atom, an optionally substituted alkyl, alkenyl, aryl or aralkyl group or a perfluoroalkyl group which may optionally comprise a terminal group E defined as -E¹ and -E² in claim 8;

 R^{14} represents $-(CH_2)_2$ -OCO- $(CH_2)_2$ - $(CF_2)_k$ - CF_3 ; with k is 2 or an integer greater than 2;

Reply to Office Action

W represents Cl, Br, I, F ClO₄, BF₄;

G represents SO3, SO4 or COO; and

-E¹ and -E² independently represent a neutral, anionic or cationic terminal group selected from

alkyl, -OH, -H, -Cl, -Br, -F (neutral groups);

-SO₃, -SO₄, -PO₃, -PO₄, -COO (anionic groups);

-[NRaRbRc]+(cationic group);

Ra, Rb and Rc independently represent a hydrogen atom or an alkyl group;

34. (Currently Amended) A lithographic printing plate precursor according to claim 31 wherein the IR light absorbing dye corresponds to one of the following formulae:

$$\begin{array}{c|c}
R^{12} & R^{13} \\
\hline
R^{14} & R^{14}
\end{array}$$

Reply to Office Action

$$CF_3$$
 CF_2 m G

$$CF_3 \left(-CF_2 \right) m$$

Reply to Office Action

$$CF_3 + CF_2 + mG$$

$$CF_3$$
 CF_2 CF_2 CF_3 CF_3

wherein

m is 2 or an integer greater than 2;

 R^{12} and R^{13} independently represent a hydrogen atom, an optionally substituted alkyl, alkenyl, aryl or aralkyl group or a perfluoroalkyl group which may optionally comprise a terminal group E defined as $-E^1$ and $-E^2$ in claim 8;

Reply to Office Action

 R^{14} represents -(CH₂)₂-OCO-(CH₂)₂-(CF₂)_k-CF₃; with k is 2 or an integer greater than 2;

W represents Cl, Br, I, F, ClO4, BF4;

G represents SO3', SO4 or COO': and

-E¹ and -E² independently represent a neutral, anionic or cationic terminal group selected from

alkyl. -OH. -H. -Cl. -Br. -F (neutral groups):

-SO₂: -SO₄: -PO₃²: -PO₄²: -COO' (anionic groups);

-[NRaRbRc]+(cationic group);

Ra, Rb and Rc independently represent a hydrogen atom or an alkyl group;

35. (Canceled)

36. (New) A lithographic printing plate precursor according to claim 1, wherein the infrared light absorbing dye further comprises at least one covalently bonded perfluoroalkyl group.

This listing of claims replaces all prior versions, and listings, of claims in the application.

This Page is Inserted by IFW Indexing and Scanning Operations and is not part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

BLACK BORDERS

IMAGE CUT OFF AT TOP, BOTTOM OR SIDES

FADED TEXT OR DRAWING

BLURRED OR ILLEGIBLE TEXT OR DRAWING

SKÉWED/SLANTED IMAGES

COLOR OR BLACK AND WHITE PHOTOGRAPHS

GRAY SCALE DOCUMENTS

LINES OR MARKS ON ORIGINAL DOCUMENT

REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY

IMAGES ARE BEST AVAILABLE COPY.

☐ OTHER:

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.